

U.S. Pat. App. Ser. No. 10/622,126
Docket No. 056754/0125184
Amendment and response to 4/11/2006 Office Action

Amendment to the Specification:

Please amend the Abstract as follows:

This invention generally relates to solution-based molecular shuttle devices. ~~More particularly, this invention relates to solution-based molecular switches, molecular assemblies, and molecular memory devices and methods for producing the same. In some embodiments the devices are made from molecular chains constructed from molecular subunits which define binding positions and shuttles that are capable of moving along the chains. and is a~~ molecular assembly line for assembling a molecule. The molecular assembly line comprises two or more molecular subunits connected to form a molecular chain, the subunits defining binding positions along the molecular chain; a translatable molecular shuttle capable of binding at each of the binding positions and of translating along the molecular chain by means of sequentially breaking and forming bonds between the molecular subunits and the shuttle in response to an input signal; an assembly molecule attached to the shuttle; and one or more molecular building blocks disposed along the molecular chain, wherein the shuttle translates between the binding positions to bring the assembly molecule and building blocks into sufficiently close proximity to allow the building blocks to react with the assembly molecule, in response to one or more input signals which interact with the molecular subunits.

Please amend Paragraph {0008} as follows:

[0001] The devices are particularly useful as molecular assembly lines. A molecular assembly line is a device that assembles a molecule by bringing the molecular building blocks of a growing molecule into sufficiently close proximity to the growing molecule to allow the building blocks to react with the growing molecule, continuing the growth process. In the assembly lines provided herein, an assembly molecule may be transported by a shuttle to any binding position along a molecular chain that brings the growing molecule into sufficiently close proximity to a building block disposed along the chain to allow the building block to react with the assembly molecule. As used herein, "the assembly molecule" simply refers to a base molecule to which

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molecular building blocks are added. Thus, the new molecule that results after each building block addition is redefined as the assembly molecule. Because the shuttles are capable of occupying any binding position along the molecular chain, the assembly lines provide a great deal of flexibility with respect to the order of addition of the building blocks.